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(54) Title: P450 OXYGENASES AND METHODS OF USE

(57) Abstract: This disclosure provides the nucleic acid and protein sequences of novel P450 oxygenases that utilize, at least, taxoid substrates including taxadiene isomers. The disclosed oxygenases, such as a taxoid 5 α -hydroxylase, hydroxylate, at least, the C5 position of a taxoid. Also provided are methods of introducing oxygen at the C5 position of a taxoid and methods of producing the anti-cancer drug, paclitaxel (also known as TaxolTM), and other taxoids, such as paclitaxel intermediates.

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